Annals of Clinical and Analytical Medicine
Original Research

Comparison of obstetric and infectious results among Syrian pregnant women

Syrian pregnant woman

Şerif Aksin[1], Numan Çim[2], Cengiz Andan[1], Şeyhmus Tunç[1], Mehmet Rıfat Göklü[1]
[1]Department of Obstetrics and Gynecology, TC Ministry of Health, Health Sciences University, Gazi Yasargil Diyarbakır Training and Research Hospital, Diyarbakir
[2]Department of Obstetrics and Gynecology,Istanbul Bilim University Faculty of Medicine, Istanbul, Turkey

Abstract
Aim: We do not have enough information about the obstetric and fetal positions of migrant pregnant women.After the Syrian civil war in 2011, neighboring countries and Europe faced a wave of migration.The study aims at comparing the obstetric, fetal, and infectious outcomes of Turkish pregnant refugee women.
Material and Methods: A total of 810 Syrian and 810 Turkish pregnant women who gave birth between January 1, 2020 and August 1, 2020 were included in the study. The demographic characteristics, obstetric, fetal, neonatal, TORCH (Toxoplasma gondii, others, rubella virus, cytomegalovirus and herpes simplex virus), HBsAg, anti-HBs, anti-HCV, and anti-HIV seroprevalences, and laboratory results of the women were compared.
Results: Adolescent pregnancies were found to be higher among Syrian pregnant women ($p<0.001$). Normal birth rates were also higher in these women ($p<0.001$). The week of pregnancy at birth, age and Apgar scores were found to be lower compared to Turkish pregnancies ($p<0.001$). The rate of delivery below 2,500 grams was higher among Syrian women ($p<0.001$). Anti-HBs protection was not sufficient ($p<0.05$), and Toxoplasma gondii seropositivity seemed to be higher ($p < 0.05$). The rate of ARH + blood group in pregnant women from Syrian (28.5%) was lower than in Turkish pregnant women (34.9%) ($p < 0.05$).
Discussion: It was observed that the rate of adolescent pregnancy was higher in refugee pregnant women. Adolescent pregnancies are at risk in terms of obstetric and neonatal outcomes. Therefore, efforts to prevent these pregnancies should be made. Syrian pregnant refugee women should be protected against adverse perinatal and infectious situations.

Keywords
Syrian refugees; Pregnancy; Parturition; Infections

DOI: 10.4328/ACAM.20411 Received: 2020-11-24 Accepted: 2021-03-31 Published Online: 2021-04-16 Printed: 2021-05-01 Ann Clin Anal Med 2021;12(5):501-505
Corresponding Author: Şerif Aksin, TC Ministry of Health, Health Sciences University, Gazi Yaşargil Diyarbakır Training and Research Hospital, Obstetrics and Gynecology, Diyarbakir, Turkey.
E-mail: serifaksin1@gmail.com P: +90 5052774937
Corresponding Author ORCID ID: https://orcid.org/0000-0002-1301-2508

Introduction

According to the 1951 Refugee Convention of the United Nations, refugees are defined as "people who flee from their country of residence for various reasons with justifiable fear of persecution and believe that they will not be able to return to that country safely under the current conditions" [1]. Wars and natural disasters force populations around the world to migrate. Migration brings along many problems related to health, accommodation, nutrition, and safety [2].

According to the United National's (UN) data dated January 12, 2017, there are 2,854,968 (58.2%) of the 4,904,021 registered Syrian refugees live in Turkey. A specially organized health care for Syrian refugees in Turkey was first established on April 29, 2011. Preventive health services are also provided to Syrian refugees [3].

Pregnant women may be exposed to many negative circumstances, such as situations that threaten their health, sexual abuse, exploitation, isolation, and a lack of social support [4]. Although accessing the health system in Turkey is not difficult, there may be problems stemming from different cultures and languages. Additional obstacles to healthcare access, including limited language proficiency, social isolation, poverty, mistrust of refugee women in healthcare providers, resistance to procedures, and communication problems, leave women vulnerable in such situations [5,6]. However, migrant women may have negative maternal-fetal, nutritional, and infectious risks [7].

The present study aims to investigate the obstetric, neonatal, and infectious statuses of Syrian pregnant migrant/refugee women in Turkey and to compare them to those of pregnant women in the country.

Material and Methods

Approval for the study was obtained from the Local Ethics Committee of the Gynecology and Obstetrics Department at Dr. Gazi Yaşargil Training and Research Hospital at Health Sciences University in Diyarbakır (Gazi Yasargil Training and Research Hospital Ethics Committee approval number: 2021-715). The study was carried out retrospectively with the hospital records of pregnant women who applied through the Ministry of Health at the Gynecology and Obstetrics Clinic of Saglik Bilimleri University's Dr. Gazi Yaşargil Training and Research Hospital between January 1, 2020 and August 1, 2020. The cases included in the study consisted of migrant pregnant women who had migrated to Turkey due to the Syrian civil war and who did not reside in the country, and the same number of pregnant women living in the region where the hospital provides health services (Diyarbakır province and its surroundings), who applied to the clinic during the same period.

A retrospective screening was performed on the file records of the cases included in the study; only complete file records were included in the study group. A total of 15 Syrian migrants and 10 pregnant women from Turkey were excluded from the study due to missing data in their files. The records of 810 pregnant Syrian migrant women were included in the archive scanning carried out in accordance with the specified criteria. The control group consisted of 810 Turkish pregnant women who applied to the hospital in the same year as the Syrian migrant pregnant women. The age, gravida, caesarean section number, blood type, hemogram, biochemistry values, HBsAg, anti-HBs, anti-HCV, and anti-HIV results obtained by the enzyme-linked immunosorbent Assay (ELISA) method, TORCH results, ultrasonographic fetal biometric parameters, weeks of pregnancy, birth weight of babies, first- and fifth-minute Apgar scores, delivery types, caesarean diagnoses, fetal complications, and obstetric complications of the cases were compared. Only cases with fetal birth weight >500 grams were included in the study.

Statistical analysis

The data were transferred to the IBM SPSS 23 program using a computer and evaluated by statistical analyzes. Before the statistical analyzes, checks were carried out to ensure that there was no data entry error and that the parameters were within the expected range. Normality assumptions of continuous variables were analyzed using the Kolmogorov- Smirnov test. The significance level was accepted as $p<0.05$ in all analyzes. The Mann-Whitney test was used to compare continuous variables that did not show a normal distribution with two-level variables. The relationships between categorical variables were analyzed using the Chi-square/Fisher's exact analysis. The significance level was accepted as $p<0.05$ in all analyzes.

Results

In this study, the first group was composed of Syrian migrant pregnant women (810 cases), while the second group was composed of Turkish pregnant women (810 cases). Ages, gravidas, Apgar scores, fetal head circumferences, and height values of the Syrian pregnant women included in the study (Group 1) were significantly lower than those of the Turkish pregnant women (Group 2) ($p<0.001$). These findings are presented in Table 1.

Mean aspartataminotransferaz (AST) and alaninaminotransferaz (ALT) values of the pregnant women in Group 1 were significantly lower than the values for those in Group 2 ($p<0.05$). The hemogram and blood biochemistry values of the cases in the study are shown in Table1.The blood types of the cases are presented in Table1. The most common blood type in Group1 was 0 Rh+, while the least common blood type was AB Rh-. In Group 2, the most common blood type was A Rh+, while the least common blood type was AB Rh-. The rate of ARH + blood group in pregnant women from Syrian (28.5%) was lower than that of Turkish pregnant women (34.9%) ($p < 0.05$).

When the anti-HBs results were compared, anti-HBs positivity was found to be statistically significantly higher in the cases in the second group ($p < 0,05$). Anti T. gondi IgM and IgG positivity were 18% and 4% and 56% and 26%, respectively ($p<0.05$).

The obstetric results of the cases are shown in Table 2. Adolescent pregnancy rates were higher in Group 1 compared to Group 2 ($p<0.001$). The number of first pregnancies was higher in Group 1 ($p<0.001$). When the mode of delivery was examined, 67.2% of the pregnant women had a vaginal delivery (72.5% in Group 1 and 61.9% in Group 2), and 32.8% had a caesarean section (27.5% in group 1 and 38.1% in group 2; $p<0.001$). When the birth weights of the babies were examined, it was observed that 9.7% of the babies were below 2,500 grams (12.8% in Group 1 and 6.8% in Group 2), while 90.3%

Table 1. Comparison of maternal, fetal, hemogram, biochemistry and blood groups

Parameters	Group 1 (n:810) Syrian migrant pregnant	Group 2 (n:810) Turkish pregnant	p-value
Age	25,94±6,53 25(8 -50)	28,47±6,94 27 (14-54)	0,001**
Gravida	1,70±1,38 1 (1-10)	3,39±2,50 3 (1-13)	0,001**
Pregnancy week at birth	35,42±4,20 37 (9-42)	35,96±3,55 37 (18-42)	0,007*
Number of cesarean	(n:225) 1,93±1,06 2 (1-5)	(n: 308) 1,92±0,91 2 (1-4)	0,561
1st minute Apgar value	7,79±1,54 8 (0-9)	8,11±0,82 8 (0-9)	0,001**
5st minute Apgar value	8,87±1,61 9 (0-10)	9,14±1,61 9 (0-10)	0,001**
Fetal birth weight (grams)	3088,21±609,68 3150 (550-5230)	3154,90±502,82 3150 (795-4600)	0,142
Fetal head circumference (cm)	34,27±2,29 35 (20-52)	34,28±1,62 34 (20-52)	0,043*
Fetal length (cm)	49,47±3,63 50 (20-60)	50,13±2,25 50 (25-55)	0,001**
Glukoz (mg/dl)	80,95±27,61 77 (28-410)	88,79±29,94 80 (48-271)	0,684
Ure (mg/dl)	15,78±10,75 14 (2-188)	14,10±1,62 14 (6-27)	0,082
Kreatin (mg/dl)	0,56±0,09 0,55 (0,21-1,24)	0,56±0,07 0,55 (0,40-0,91)	0,763
AST (U/L)	21,97±14,70 19 (8-271)	27,86±28,71 20 (7-324)	0,007*
ALT (U/L)	13,40±12,32 11 (2-206)	25,41±48,94 13 (6-632)	0,001**
Hemoglobin (Hgb) (g/dl)	10,82±1,71 11,00(0,00-19,00)	10,67±1,83 10,80 (0,00-23,40)	0,087
Hematokrit (Hct) (%)	33,04±4,79 34 (3-60)	32,84±4,51 33 (18,40-58,60)	0,090
Platelet (103/mm3)	239,62±69,78 234,00 (30,00-503,00)	228,23±26,49 236,00 (98,00-419,00)	0,075

TORCH						
Group 1	n	%	Neg.	Poz	%	
Anti Rubella IgG	35	8	3	32	92	
Anti Rubella IgM	32	100	32	0	0	
Anti CMV IgG	25	0	0	25	100	
Anti CMV IgM	24	95.7	23	1	4.3	
Anti T.gondii IgG	27	44	12	15	56	
Anti T.gondii IgM	34	82	28	6	18	
Group 2	n	%	Neg.	Poz	%	p value
Anti Rubella IgG	80	4	3	77	96	0,184
Anti Rubella IgM	85	99.8	84	1	0.2	0,977
Anti CMV IgG	79	0.1	1	78	99.9	0,986
Anti CMV IgM	81	98	80	1	2	0,704
Anti T.gondii IgG	103	74	76	27	26	0.026
Anti T.gondii IgM	100	97	2180	25	4	0.019

Blood groups	Group 1		Group 2		Total	
	n	%	n	%	n	%
ABRH+	56	9,2	41	6,3	97	7,7
ABRH-	4	0,7	4	0,6	8	0,6
BRH+	127	20,8	102	15,8	229	18,2
BRH-	16	2,6	10	1,5	26	2,1
ARH+	174	28,5	226	34,9	400	31,8
ARH-	21	3,4	30	4,6	51	4,1
0RH+	189	31,0	202	31,2	391	31,1
0RH-	23	3,8	32	4,9	55	4,4

Table 2. Comparison of caesarean indications, obstetric complication, fetal and ELISA data of the cases

Parameters	Group 1 Syrian migrant pregnant		Group 2 Turkish pregnant		Total		x^2	p
	n	%	n	%	n	%		
Number of caesarean section							,001	,977
0-2	169	75,1	231	75,0	400	75,0		
≥ 3	56	24,9	77	25,0	133	25,0		
Age							23,493	,001**
< 17 years	51	6,3	13	1,6	64	4,0		
≥ 18 years	757	93,7	795	98,4	1552	96,0		
Gravida							84,617	,001**
0-4	597	93,4	281	72,6	878	85,6		
≥ 5	42	6,6	106	27,4	148	14,4		
Fetal gender							,379	,538
Female	307	48,0	318	49,8	625	48,9		
Male	332	52,0	321	50,2	653	51,1		
Fetal weight							17,677	,001**
< 2500	103	12,8	53	6,6	156	9,7		
≥ 2500	702	87,2	751	93,4	1453	90,3		
Fetal weight							,137	,712
< 4000	771	95,8	767	95,4	1538	95,6		
≥ 4000	34	4,2	37	4,6	71	4,4		
Fetal weight							3,791	,052
< 1000	10	1,2	3	0,4	13	0,8		
≥ 1000	795	98,8	801	99,6	1596	99,2		
Birth method							20,601	,001**
Normal	586	72,5	501	61,9	1087	67,2		
Cesarean section	222	27,5	308	38,1	530	32,8		
Week of gestation							,236	,627
< 33	78	18,7	68	17,3	146	18,0		
≥ 34	340	81,3	324	82,7	664	82,0		
Stillbirth							,296	,586
Dead	17	2,1	14	1,7	31	1,9		
Living	792	97,9	795	98,3	1587	98,1		
ELISA								
Antihcv							-	,374
No	617	99,8	614	99,4	1231	99,6		
Yes	1	0,2	4	0,6	5	0,4		
Hbs ag							1,295	,255
No	605	97,9	619	96,9	1224	97,4		
Yes	13	2,1	20	3,1	33	2,6		
Anti-HBs								,003*
Negatif	733	90,6	616	76	1359	83,8		
Pozitif	77	9,4	194	24	101	16,2		
Anti-HIV							-	-
Negatif	810	100	810	100	1620	100		
Pozitif	0	0	0	0	0	0		
Caesarean indications			n	%		n		
Head-pelvis incompatibility	29	13,3	28	3,5	57	5,6		
Multiple pregnancies	17	7,8	46	5,7	63	6,1		
Fetal distress	10	4,6	67	8,3	77	7,5		
Previous uterine surgery	129	59,2	507	62,7	636	61,9		
Cord prolapse	2	0,9	2	0,2	4	0,4		
Placenta anomalies	6	2,8	13	1,6	19	1,9		

Presentation anomalies	2	0,9	9	1,1	11	1,1		
Prolonged travay	8	3,7	35	4,3	43	4,2		
Other	15	6,9	102	12,6	117	11,4		
Obstetric complication							-	-
Preeclampsia	3	13,0	3	9,1	6	10,7		
Placenta previa	2	8,7	4	12,1	6	10,7		
Multiple pregnancies	8	34,8	8	24,2	16	28,6		
Intrauterine ex	8	34,8	12	36,4	20	35,7		
Oligohydroamnios	2	8,7	6	18,2	8	14,3		

were above 2,500 grams (87.2% in Group 1 and 93.2% in Group 2; p<0.001).

The caesarean section indications of the cases are shown in Table 2. In the Syrian immigrant pregnant women (Group1), the most frequent causes of caesarean section were head-pelvis incompatibility and previous uterine surgery (59.2%), and the least frequent causes wereumbilical cord prolapse and fetal presentation anomaly (0.9%). In Turkish pregnant women (Group-2), it was observed that caesarean operation was performed mostly because of previous uterine surgery (62.7%) and fetal distress, and lessoften because of cord prolapse (0.2%). Complications occurring in the pregnancies are presented in Table 2.

Discussion

Migrations have occurred around the world for centuries due to natural disasters, wars, or other reasons. People migrate to countries with better conditions than those in which they live, hoping to find better opportunities. The migrant pregnant women in the present study were citizens of other countries who emigrated due to war. Citizens who migrate to another country without permission benefit from fewer health insurance expenses than the country's citizens. As a result, they may not have access to services such as preventive health and prenatal follow-up, and this may cause negative reproductive results [8,9].

In the present study, the mean age of pregnant Syrian migrant women was lower than that in the control group (25.94±6.53 and 28.47±6.94, respectively; p<0.001). The gravida average of the pregnant Syrian migrants was lower than that of pregnant women in the control group (1.70±1.38 and 3.39±2.50, respectively; p<0.001). In a study by Mumtaz et al. examining pregnancy, childbirth, and postpartum care of migrant women who had recently arrived in Canada compared to Canadian women, the mean age of pregnant Canadian migrant women was lower than that of the control group. The gravida numbers were similar in both groups [10].

When the type of delivery was examined in both groups, the rate of normal birth was higher in the Syrian group. There was no difference in cesarean rates between the groups. When cesarean operation indications were examined, head-pelvis incompatibility and previous uterine surgery rates were high in the group of pregnant Syrian women. In the group of Turkish pregnant women, however, the rates of previous uterine surgery and cesarean operations performed due to fetal distress were found to be high. Normal birth rates were high in the group of Syrian women. Kıyak et al. and Güngör et al. found similar birth rates in their studies [11,12]. Cesarean section rates were also found to be high in a study conducted among Syrian refugee women in Lebanon [13].

In a meta-analysis of 76 studies comparing cesarean rates in migrant and non-migrant women in industrialized countries of the West, it was reported that women who migrated from sub-Saharan Africa, Somalia, and South Africa gave birth by caesarean more than women in the developed countries. Further, Eastern European and Vietnamese women had lower caesarean rates, and North African, West Asian, and Latin American women had an emergency caesarean section. It was also found that communication barriers, low socio-economic status, poor maternal health, cephalopelvic mismatch (CPD), gestational diabetes/high BMI, and lack of prenatal care were the most common risk factors for caesarean in migrant women [14].

In the Syrian migrant pregnant group, infants' first- and fifth-minute Apgar scores were found to be lower than in women in the Turkish pregnant group, which is similar to other findings in the literature (p <0.05). Age, gravida, Apgar score, fetal head circumference, and height were found to be significantly lower in the group of Syrian pregnant women than in the group of Turkish pregnant women (group 2; p<0.001). A total of 9.7% of babies had a birth weight of <2500 grams (12.8% in group 1 and 6.8% in group 2). Low infant birth weight in the subgroup analysis may have been caused by the specific problems faced by migrant women, such as feeding and war trauma.

In a study that investigated the health status of pregnant refugee women in Sweden between 2014 and 2017, Liu et al. found that refugee women had a higher risk of poor pre-pregnancy general health status, gestational diabetes, and serious anal sphincter damage. In addition, the rates of stillbirth, low birth weight, and small birth rate compared to gestational age were higher for the refugee women. Further, neonatal Apgar scores at birth were lower than those of Swedish-born women, and the rates of adverse infant outcomes were higher [15].

HBsAg positivity and negativity rates were similar in the pregnant women; the HBsAg positivity rate was 2.6% (p = 0.255). When the anti-HBs results were compared, anti-HBs positivity was found to be statistically significantly higher in the cases in the second group (p < 0.05)

In their study examining the seroprevalence of HBsAg positivity in native and migrant pregnant women in Taiwan, Lin et al. found that the HBsAg positivity rate was 12.4% for all of the women. Taiwanese women and migrants from China and Cambodia had high rates of HBsAg positivity, while Thai women had the lowest HBsAg positivity rate. Lin et al. reported that HBsAg positivity rates showed a statistically significant difference between local and migrant pregnant women (p<0.001). They also reported that HBsAg positivity in native pregnant women decreased linearly over the years (1996–2015) with the implementation of the hepatitis B vaccine program in their country, but that HBsAg positivity did not show a significant decreasing trend in pregnant migrant women [16].

In the present study, no significant difference was found between Turkish and Syrian pregnant women in terms of anti-Rubella IgM and IgG positivity and anti-CMV IgM and IgG positivity (p=0.704 and 0.986, respectively). Anti T. gondi IgM and IgG

positivity rates were 18% and 4% for the Syrian women, and 56% and 26% for the Turkish women. The difference between the groups was found to be significant ($p<0.05$).

In another study, Sampedro et al. found a higher rate of seroprevalence of Toxoplasma in pregnant migrant women compared to non-migrants. The overall prevalence of anti-rubella immunization was 97.3%. They also found the lowest prevalence in Sub-Saharan and North African women (88% versus 89%). In their study, the prevalence of HBsAg in migrants was higher compared to that of Spanish women (2.6% versus 0.4%), and they reported that this rate was particularly high among Eastern European (6.9%) and Asian pregnant women (8.1%) [17]. In their study investigating the rubella immunization status in migrant and Canadian pregnant women in Toronto, McElroy et al. found that around 93% of Canadian women were immune to rubella. They also found that the lowest rubella immunity rates were in pregnant women born in North Africa and the Middle East (87.1%), as well as in China and the South Pacific (91.5%) [18].

Our study shows that the Syrian population has a higher Toxoplasma seropositivity compared to Turkish citizens. Similarly, eating habits and accommodation and hygiene problems causedby migration can affect seropositivity. Knowing of TORCH infections of Syrian migrants, who frequently migrate to Europe and other countries, may enable proactive approaches of health systems in providing prenatal care for Syrian pregnant women who have been integrated into Europe. Racape et al. reported that negative perinatal outcomes were not always correlated and that high levels of socio-cultural and economic activity in immigrant groups prevented negative perinatal outcomes [19.20]. In another study, Gagnon et al. found that risks such as low birth weight, preterm delivery, perinatal mortality, and congenital anomalies among immigrant pregnant women were similar in countries with strong integration policies, and more negative consequences had been found in European countries with weak integration policies [21]. The American College of Obstetrics and Gynecology (ACOG) advocates the removal of all existing barriers to universal health care for all pregnant women regardless of their migration status [22].

The limitations of this study are that it was conducted retrospectively, and the educational levels, vaccination statuses, and socio-economic statuses of the Syrian pregnant women could not be evaluated.

Conclusion

It was observed that the rate of adolescent pregnancy was higher in refugee pregnant women. Adolescent pregnancies are at risk in terms of obstetric and neonatal outcomes. Therefore, efforts to prevent these pregnancies should be made. Also, there should be a plan for providing more supportive health care services for Syrian refugee pregnant women who are vulnerable to infectious agents and have negative obstetric outcomes.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

Funding: *None*

Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

References

1- McLean E, Cogswell M, Egli I, Wojdyla D, de Benoist B. Worldwide prevalence of anaemia, WHO Vitamin and Mineral Nutrition Information System, 1993-2005. Public Health Nutr. 2009;12(4):444-54.

2-Khanlou N, Haque N, Skinner A, Mantini A, Kurtz Landy C. Scoping Review on Maternal Health among Immigrant and Refugee Women in Canada: Prenatal, Intrapartum, and Postnatal Care. J Pregnancy. 2017;2017:8783294.

3-Tayfur I, Günaydin M, Suner S. Healthcare Service Access and Utilization among Syrian Refugees in Turkey. Ann Glob Health. 2019;85(1):42.

4- Briscoe, L., Lavender, T. Exploring maternity care for asylum seekers and refugees. British Journal of Midwifery. 2009; 17(1):17-23.

5- Fair F, Raben L, Watson H, Vivilaki V, van den Muijsenbergh M, Soltani H. Migrant women's experiences of pregnancy, childbirth and maternity care in European countries: A systematic review. PLoS One. 2020;15(2):e0228378.

6-Higginbottom G, Bell AS, Arsenault J, Pillay J. An integrative review of experiences of maternity services for immigrant women in Canada. Diversity and Equality in Health and Care. 2012; 9(4): 253-66

7-Heslehurst N, Brown H, Pemu A, Coleman H, Rankin J. Perinatal health outcomes and care among asylum seekers and refugees: a systematic review of systematic reviews. BMC Med. 2018;16(1):89.

8-Berk ML, Schur CL, Chavez LR, Frankel M. Health care use among undocumented Latino immigrants. Health Aff (Millwood). 2000;19(4):51-64.

9- Fuentes-Afflick E, Hessol NA, Bauer T, O'Sullivan MJ, Gomez-Lobo V, Holman S, et al. Use of prenatal care by Hispanic women after welfare reform. Obstet Gynecol. 2006;107(1):151-60.

10-Mumtaz Z, O'Brien B, Higginbottom G. Navigating maternity health care: a survey of the Canadian prairie newcomer experience. BMC Pregnancy Childbirth. 2014;14:4.

11- Alnuaimi K, Kassab M, Ali R, Mohammad K, Shattnawi K. Pregnancy outcomes among Syrian refugee and Jordanian women: a comparative study. Int Nurs Rev. 2017;64(4):584-92.

12- Kiyak H, Gezer S, Ozdemir C, Gunkaya S, Karacan T, Gedikbasi A. Comparison of delivery characteristics and early obstetric outcomes between Turkish women and Syrian refugee pregnancies. Niger J Clin Pract. 2020;23(1):12-17.

13- Güngör ES, Seval O, İlhan G, Verit FF. Do Syrian refugees have increased risk for worser pregnancy outcomes? Results of a tertiary center in İstanbul. Turk J Obstet Gynecol. 2018;15(1):23-7.

14- Merry L, Small R, Blondel B, Gagnon AJ. International migration and caesarean birth: a systematic review and meta-analysis. BMC Pregnancy Childbirth. 2013;13:27.

15-Liu C, Ahlberg M, Hjern A, Stephansson O. Perinatal health of refugee and asylum-seeking women in Sweden 2014-17: a register-based cohort study. Eur J Public Health. 2019;29(6):1048-55.

16-Lin CC, Shih CT, Lee CH, Ku MK, Huang YL. Seroepidemiology of Hepatitis B Virus Infection in Native and Immigrant Pregnant Women: A 20-Year Retrospective Study in Taiwan. Am J Trop Med Hyg. 2019;101(4):899-904.

17- Sampedro A, Mazuelas P, Rodríguez-Granger J, Torres E, Puertas A, Navarro JM. Marcadores serológicos en gestantes inmigrantes y autóctonas en Granada (Spanish). Enferm Infecc Microbiol Clin. 2010;28(10):694-7.

18-McElroy R, Laskin M, Jiang D, Shah R, Ray JG. Rates of rubella immunity among immigrant and non-immigrant pregnant women. J Obstet Gynaecol Can. 2009;31(5):409-13.

19-Racape J, Schoenborn C, Sow M, Alexander S, De Spiegelaere M. Are all immigrant mothers really at risk of low birth weight and perinatal mortality? The crucial role of socio-economic status. BMC Pregnancy Childbirth. 2016;16:75.

20-Paquier L, Barlow P, Paesmans M, Rozenberg S. Do recent immigrants have similar obstetrical care and perinatal complications as long-term residents? A retrospective exploratory cohort study in Brussels. BMJ Open. 2020;10(3):e029683.

21- Gagnon AJ, Zimbeck M, Zeitlin J, ROAM Collaboration, Alexander S, Blondel B, et al. Migration to western industrialised countries and perinatal health: a systematic review. Soc Sci Med. 2009;69(6):934-46.

22-ACOG Committee Opinion No. 425: health care for undocumented immigrants. Obstet Gynecol. 2009;113(1):251-4. DOI: 10.1097/AOG.0b013e3181964280.

How to cite this article:

Şerif Aksin, Numan Çim, Cengiz Andan, Şeyhmus Tunç, Mehmet Rıfat Göklü. Comparison of obstetric and infectious results among Syrian pregnant women. Ann Clin Anal Med 2021;12(5):501-505